2010

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Abstract

Non-IT organizations increasingly rely on IT to achieve both operational excellence and strategic competitiveness. IT employees play pivotal roles in helping non-IT organizations realize the potential of IT. Yet, the turnover culture within the IT profession has posed challenges to organizations. How to effectively manage and retain IT human capital has become a critical issue. The current study examines turnover issue among IT employees in non-IT organizations from an organizational identification perspective. We propose that IT employees' organizational identification could weaken their turnover behavior. Further and more importantly, the study explores organization-, job-, and relation-related antecedents to IT employees' organizational identification. A survey with 126 IT employees provides significant empirical support. IT employees' organizational identification has a significant negative effect on turnover intention. Business-IT alignment, boundary spanning activities, and the closeness of the relationships with non-IT employees can significantly improve IT employees' organizational identification.

Keywords: IT employees, turnover intention, organizational identification, business-IT alignment, boundary spanning activities, interpersonal relationships

Introduction

Non-Information Technology (non-IT) organizations increasingly rely on IT to achieve both operational excellence and strategic competitiveness. They need to consistently tap their IT human capital to transform operational and strategic objectives into various IT applications and solutions. IT employees in non-IT organizations play pivotal roles through unleashing and realizing the potentials of IT (Ferratt et al. 2005). Organizations should ensure that they have a stable stock of IT human capital to help them not only capitalize on the existing IT investment but also chart and implement innovative IT initiatives. Yet, IT professionals are characterized as having relatively low organizational citizenship, leading to the turnover culture within the IT profession (Mithas and Krishnan 2008, Moore and Burke 2002). Thus, how to effectively manage and retain IT human capital has become a critical issue confronting many non-IT organizations (Ferratt et al. 2005).

The human resource management literature shows that cultivating employees' organizational identification is an effective means to improve and facilitate human capital management. Studies have found that, in general, organizational identification can lead to favorable workplace behavior. For instance, organizational identification can help boost employees' citizenship behavior, enhance organizational commitment, and reduce turnover intention (Cole and Bruch 2006). However, the documentation on IT employees' organizational identification is limited. Such limitation is manifested in two respects. First, as shown in the comprehensive review of the literature on the turnover behaviors of IT employees by Joseph et al. (2007), there has been no empirical research to explicitly validate that IT employees' organizational identification could weaken their turnover behavior. Second, there has been little documentation on how IT employees develop organizational identification in extant literature. The dearth of knowledge about the factors that could enhance IT employees' organizational identification leads to the lack of systematic guidelines for organization executives to follow to improve the management of IT human capital. Many

non-IT organizations may be aware of the importance of increasing IT employees' organizational identification to address turnover problems. However, without an insight into the factors that can enhance organizational identification, managers and executives may find it difficult to devise and implement practices to foster IT employees' organizational identification.

The current study examines turnover behaviors of IT employees in non-IT organizations from an organizational identification perspective and addresses the two limitations indicated above. It first establishes that organizational identification can alleviate IT employees' voluntary turnover decisions and behaviors. Second, and more importantly, the study explores the antecedents to IT employees' organizational identification. Our study draws on social identity theory. The central thesis of this theory is that one tends to define oneself with the social category within which one falls and develop a social identity pertinent to the social category (Hogg and Terry 2000). In a work setting, identifying with the organization and form an organizational identity is a natural psychological process an employee experiences. Based on our examination and analysis of the unique IT work contexts in non-IT organizations, we identify factors in relation to the organizational context, the characteristics their job assignments, and their personal relationships as the antecedents to IT employees' organizational identification. An empirical study conducted in China provides overall support for our theorizing. Specifically, we found that business-IT alignment, boundary crossing activities, and the closeness of the relationships with non-IT employees can significantly improve IT employees' organizational identification.

The paper proceeds as follows. It first introduces the theoretical foundations and formulates research hypotheses. Next, it describes a survey that was carried out to test our hypotheses empirically. After reporting analysis results, which provide strong support for our hypotheses, we discuss the theoretical contributions and practical implications of the study.

Theoretical Foundations and Hypotheses

Organizational Identification and its Development Mechanisms

Social identities reflect how individuals define themselves in social lives. They can be ascribed based on gender, age, ethnicity, or nationality, or be derived from the organization or work group to which one belongs (Hogg and Terry 2000). Given the multiple roles one needs to play in a society, one's self-concept could be composed of a collection of identities, each of which evolves from the membership in a distinct social group (Dutton et al. 1994). The different social identities coexisting in an individual's self-definition system can be of varying salience. The salience of each identity is determined by the relative strength of the antecedents that help the individual develop that identity as well as the contextual triggers that activate that identity (Hogg and Terry 2000, Turner 1987).

Organizational identification is an important identity development process that an employee generally experiences at work. It is defined as "perception of oneness with, or belongingness to, an organization where the individual defines himself or herself in terms of the organization in which he or she is a member" (Mael and Ashforth 1992, pp. 105).

Different mechanisms have been proposed to underlie the development of organizational identification. First, individuals can identify with their organizations based on impersonal factors such as organizational prestige, distinctiveness and value (George and Chattopadhyay 2005). Because one of the fundamental drivers of identifying with a social group is to enhance self-esteem (Erez and Earley 1993), individuals tend to pursue positive social identities and are more likely to identify with a social group that is perceived to possess favorable characteristics such as prestigious status and positive image.

Second, identification can be developed based on personal factors such as relationships and interactions with other organizational members (e.g., Brewer and Gardner 1996; George and Chattopadhyay 2005). Bartel and Dutton (2001) have suggested that organizational identification stems from the fundamental human needs to establish and maintain relationships with a social entity. By maintaining relationship with significant others within an organization, individuals derive a relational self-concept (Brewer and Gardner 1996) and satisfy an innate drive to bond (Lawrence and Nohria 2002). Intimate relationship and heightened interactions with a social group could result in an individual's sense of belonging to the group and, thus, identification with the group would be more salient.

Third, individuals can develop their social identities through self-categorization. According to social identity theory, particularly self-categorization theory (Hogg and Terry 2000, Turner 1987), individuals categorize themselves into

the social group they belong to (termed as in-group) and incorporate and internalize the characteristics of the in-group to construct their own social identities. The salience of the constructed identity is affected by intergroup social comparison between the in-group and out-groups (Turner 1975). Identification developed through self-categorization could also occur in an organizational context. Organizations consist of internally structured groups that are located in complex networks of intergroup relations characterized by power, status, and prestige differentials (Hogg and Terry 2000). When employees can clearly perceive the boundaries between their work groups and other groups due to group differences in power, status, and prestige, they are more likely to categorize themselves into the in-group and define themselves at group level. On the other hand, when the boundaries between in-groups and out-groups become vague either because all groups have comparable power, status, and prestige or because linkages and bridges are built to extend the in-group to out-groups, the employee tends to have a larger frame of reference to define self. The extended frame of reference will make the employee perceive that members in the in-group and the out-groups are interchangeable and all are the members of the superordinate social entity (i.e., the organization).

IT Employees' Organizational Identification and Turnover Intention

Identification with an organization invokes a psychological process whereby an individual's self-identity becomes intertwined with the organization's identity (Cole and Bruch 2006; van Knippenberg and Sleebos 2006). The convergence of personal and organizational identities can lead to a variety of behavioral outcomes such as increased job motivation, extra-role performance, and organization commitment (van Knippenberg and Sleebos 2006, Bergami and Bagozzi 2000, Foreman and Whetten 2002, Van Vugt and Hart 2004). Psychological oneness arising from organizational identification fosters a sense of belonging and leads to a long term committed relationship between an employee and his/her organization. We extend the general positive effect of organizational identification on employee-organization relationship to our research context and conjecture that an IT employee's turnover intention would be lower when his/her organizational identification is high.

H1: An IT employee's organizational identification is negatively associated with turnover intention.

Factors Influencing IT Employees' Organizational Identification

We identify the factors that could influence organizational identification of IT employees working in non-IT organizations in three aspects. All of these antecedents exert their influences through the three mechanisms indicated previously. First, we theorize that organizational contexts may have an impact on IT employees' organizational identification. Departmentalization is the common approach to structuring organizations. In most organizations, IT employees are located in IT departments. Through an impersonal mechanism, the status, power, and prestige of the IT department in an organization could affect IT employees' self-definition, self-esteem, and identification with the organization. We posit that to certain extent, an organization's evaluation and recognition of the strategic value of IT may determine the status, power and prestige of the IT department. Recognition of the strategic potential of IT may promote the IT department's overall status, which in turn could strengthen IT employees' identification with the organization. Second, IT employees' job characteristics could affect their organization identification. Some IT employees engage in more boundary spanning activities such as analyzing IT users' work processes and requirements as well as designing information systems for the users, whereas other IT employees' may work within the department boundary to maintain system infrastructures and have limited chances to cut across functional boundaries during work. Such work characteristics could possibly affect how IT employees define in-groups and out-groups and categorize themselves within the organization. Given that one's self-categorization leads to identify formation, IT employees' organizational identification could vary with the extent to which they perform boundary spanning activities. Third, through work-related interactions, IT employees could develop personal relationships with peer IT employees and non-IT employees. The characteristics of IT employees' personal relationships could affect their organizational identification through a personal mechanism.

In the following sections, we elaborate on the factors we have identified and explain in detail how these factors influence IT employees' organizational identification in non-IT organizations.

The Effect of Business-IT Alignment on IT Employees' Organizational Identification

Business-IT alignment describes the extent to which the mission, objectives, and plans contained in business strategies are shared and supported by IT/IS strategies (Reich and Benbasat 1996). It involves "applying information technology (IT) in an appropriate and timely way and in harmony with business strategies, goals, and needs" (Luftman and Brier 1999, p. 109).

Business-IT alignment could strengthen IT employees' organizational identification by addressing the possible inequality between the IT department and other functional departments. Inequality is ubiquitous in physical collocated groups (Bales 1950, Bales and Slater 1955). In a non-IT organization, inequality between the IT department and non-IT departments is also likely to exist. Compared with other functions such as finance, accounting, and marketing, IT has been a relatively new advancement in business operations and its business value and criticality are sometimes less observable. Additionally, IT employees often play a role mainly to support other business processes (Mithas and Krishnan 2008). Consequently, the status of IT departments and IT employees tends to be inferior compared with employees in other functions. Status inequality could result in social and psychological boundaries that separate IT employees from the employees in other organizational units. IT employees may perceive themselves as in a minority group and have difficulty establishing self-esteem within the organization. Positioning IT employees within the organization that does not recognize the strategic contribution of IT could only remind them of their relatively inferior status, thus their organizational identification would be hampered.

Business-IT alignment could alter IT employees' perception of self-value and resulting organizational identification. Formal recognition of the strategic contribution and value of IT from the top management could be interpreted by both IT employees and employees outside the IT department as a signal of the criticality of IT. As a result, the divide between the IT department and other functional departments resulting from unequal power and prestige would become blurred. Moreover, alignment between IT and business strategies could make the superordinate identity (i.e., the organization) more salient. IT employees may view themselves to be embedded in both the IT function as well as the entire organization. As a result, business-IT alignment could boost IT employees' status, image and legitimacy in the organization, which represent important impersonal factors that could increase organizational identification.

Business-IT alignment also entails mutual understanding and shared knowledge bases between IT professionals and non-IT employees (Reich and Benbasat 1996, 2000). With IT professionals gaining more business competencies and non-IT employees developing more IT-competencies, the knowledge gap between IT professionals and non-IT employees could be dissolved. They would be less likely to view the other party as a dissimilar entity. Heightened similarity between IT and non-IT employees could help eliminate or fade the boundaries between them. Thus, IT employees could have broader and larger frames of reference to view and define themselves in working contexts. Such enlarged self-defining frames may become more inclusive and transcend departmental and functional boundaries.

Alignment between business and IT strategies may also heighten IT employees' organizational identification through enhancing interpersonal relationships between IT and non-IT employees. High alignment requires collaborations between IT and non-IT employees in developing and implementing information technologies and systems to realize various business strategies. Improvement in intergroup interactions and relationships would blur the boundaries between IT and non-IT employees. IT employees' identification is more likely to be extended to other functions and the entire organization.

> *H2: The extent of alignment between business and IT is positively associated with an IT employee's organizational identification.*

The Effect of Boundary Spanning Activities on IT Employees' Organizational Identification

Boundary spanning activities refer to the employee's crossing of interdepartmental boundaries in order to accomplish job assignments. These activities mainly involve various forms of communication beyond the employee's immediate department and may include formal and informal contact, meetings, and written communication (Adams 1976, Baroudi 1985, Guimaraes and Igbaria 1992). Different IT work assignments require varying level of boundary-crossing. For instance, system analysts tend to cross departmental and functional boundaries more often than programmers as the former's job assignments require them to have more interactions with users in other functional areas than the latter (Guimaraes and Igbaria 1992, Pawlowski and Robey 2004).

For boundary-spanning IT employees, boundaries between themselves and business users are often unclear. High level of boundary spanning activities could blur structural boundaries between IT and other functional departments and shorten IT employees' perceived relational distance with organizational members in other departments. IT employees would define themselves as similar to non-IT employees throughout the organization. On the contrary, IT employees who are constrained by the boundaries between the IT department and other functional departments would have a clear definition of the in-group and out-groups. They are less likely to internalize the members in other

functions and departments to define their identities in the organization. Their self-defining frames of reference tend to be centered on the IT department and are unlikely to be extended to the superordinate organizational level.

Moreover, boundary spanning activities could be a significant source of job power and impacts and enhance one's influence and visibility in the organization (Baroudi and Igbaria 1995). If IT employees engage in more boundary spanning activities, their status and images throughout the organization could be enhanced. They are consequently likely to define themselves in the organization context because this could help reaffirm their value and worth. Conversely, if IT employees engage in limited boundary spanning activities, their influences might be constrained within their immediate work groups. They will be more likely to define themselves at the IT department level and less likely to identify with the entire organization. Thus, we hypothesize,

H3: The extent of boundary spanning activities is positively associated with an employee's organizational identification.

The Effects of Relational Closeness with IT Employees and non-IT employees on IT Employees' Organizational Identification

Organizational identification can also develop on the basis of personal relationships formed at workplace (Sluss and Ashforth 2007). IT employees often interact and therefore could develop close interpersonal relationships with two groups of people, namely peer IT employees and non-IT employees. We propose that IT employees' relationships with the two groups of employees will have different effects on their organizational identification.

Close relationships among IT employees in the same IT department may render the department a comfort zone. A strong psychological and emotional attachment to the IT department could accrue with close interpersonal relationships. As a result, IT employees would be more likely to categorize and define themselves at the departmental level and identify with the IT department. Such identification could possibly reduce the interactions between IT and non-IT employees. Therefore, it would be difficult for an IT employee to form a more inclusive self-defining frame of reference, which is essential for the development of organizational identification.

H4: The closeness of personal relationships with peer IT employees is negatively associated with an IT-employee's organizational identification.

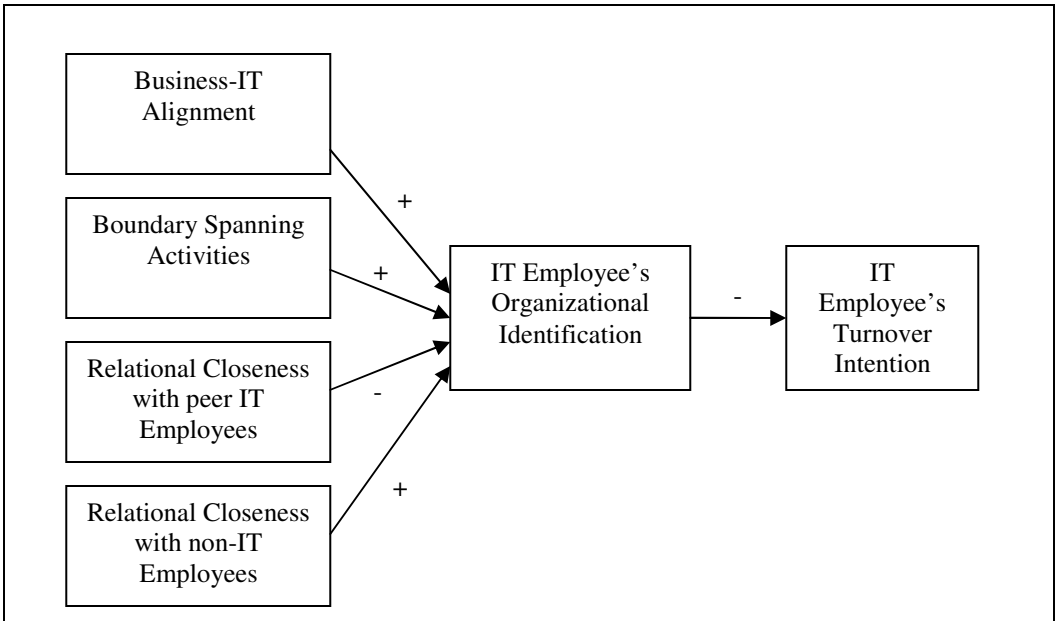

Figure 1. Research Model

On the other hand, close relationships with non-IT employees would reduce psychological distance between IT and non-IT employees and blur intergroup boundaries, leading to the perception of equality between IT and non-IT groups. Kunda et al. (2002) have found that professional employees develop networks with members in out-groups to deal with social isolation and attempt to avoid becoming "professional strangers" in the organization. This

purposeful effort by professional employees demonstrates that establishing cross-boundary personal network could be an effective approach to help them attach to and immerse in the organization as a whole. With inter-department boundaries becoming unclear, IT employees are more likely to categorize themselves into the social group that is superior to their IT department. Hence, close relationships with employees in other non-IT functions and departments could result in heightened organizational identification.

H5: The closeness of personal relationships with non-IT employees is positively associated with an IT-employee's organizational identification.

Figure 1 presents our research model.

Methodology

Measurement Instruments

A survey was conducted to test our hypotheses. We adapted and enhanced measurement instruments from previous studies for the survey questionnaire. The measurement instruments we have chosen possess high reliability and validity and have been tested by other research. Turnover intention was measured with the instruments adapted from Jiang and Klein's (2002) and Moore's (2000). We integrated the scales from Mael and Ashforth (1992) and Abrams (1992) to measure organizational identification. The scale of business-IT alignment was adapted from Preston and Karahanna (2009). We also added one question item to capture how top management recognizes the strategic value of IT as alignment between business and IT is often determined by the top management when formulating organizational strategies. Boundary spanning activities were measured by the instrument adapted from Miles and Perreault (1976) and Baroudi (1985). Table 1 shows the measurement instruments used in the study. All questions were measured on a 1 (strongly disagree) to 7 (strongly agree) Likert scale.

Table 1: Instruments

Constructs	Questions	Sources
Turnover Intention	1. I will probably look for a job at a different company next year.	Jiang and Klein (2002); Moore (2000)
	2. I think about leaving my organization.	
	3. I will be with my organization two to three years from now.	
	4. I will be with my organization for a long period.	
Organizational Identification	1. When someone criticizes my organization, it feels like a personal insult.	Mael and Ashforth (1992); Abrams (1992)
	2. When someone praises my organization, it feels like a personal compliment.	
	3. When I talk about my organization, I usually say 'we' rather than 'they'.	
	4. My organization's successes are my successes.	
	5. If a story in the media criticized my organization, I would feel embarrassed.	
	6. I feel strong ties with my company.	
	7. I feel proud to be a member of my company.	
	8. I feel a strong sense of belonging to my company.	
	9. Belonging to my company is an important part of my self-image.	
Business-IT Alignment	1. The IS strategy is congruent with the company's business strategy in my company.	Preston and Karahanna (2009) and self –
	2. Decisions in IS planning are tightly linked to the organization's strategic plan.	

	3. Our business strategy and IS strategy are closely aligned.	developed
	4. Top management in my company recognizes the strategic roles of IT and IS.	
Boundary Spanning Activities	1. I need to represent the IT department to deal with people from other departments in my company and other companies.	Miles and Perreault (1976), Baroudi (1985) and self-developed
	2. My job often involves cross-departmental coordination and collaboration.	
	3. In order to get my work done, I need to deal with people from other department to get support.	
	4. I often communicate with employees from other departments to discuss information system functions and configurations.	
	5. To deal with different functional department is the norm of my daily work.	
	6. I cannot get my work done smoothly without the input from other departments.	

The measurement of the characteristics of IT employees' personal relationships was adapted from Burt et al.'s (2000) name generator methodology. The IT employees were asked to recall people with whom they interacted at work and listed their names (at least 3 and maximum 10 names). After generating names, the respondents were asked to provide more detailed information about each person they had named. Specifically, beside each name, they evaluated on a 5-point scale how close they felt to the person (1 – very intimate 2 – close; 3 – neutral 4 – slightly distant, and 5 – distant, reverse worded) and reported whether the person was from the IT department or a non-IT department. Table 2 shows how the characteristics of IT employees' personal relationships were measured in the study.

Table 2: Measurement of Personal Relationships

	Name (nickname)	Closeness (1 – very intimate; 2 - close; 3 – neutral; 4 – slightly distant; 5 – distant)	Department (choose 1 if the person is from IT department; choose 2 if the person is from a non-IT department)
1		1 2 3 4 5	1 2
. . .		. . .	. . .
10		1 2 3 4 5	1 2

We also included some individual and organizational factors as control variables. They were gender, age, education, tenure with the organization, work tenure, salary, firm type (state-owned, private, foreign venture, joint venture, etc.), number of employees in the organization and in the IT department, and the organization's rank in the industry.

Data Collection

The survey was conducted in China. The Chinese version of the questionnaire was developed through a double-translation process. The English questionnaire was first translated into Chinese by a professional translator. Next, the translated questionnaire was backward-translated into English by another professional translator. Several academics, bilingual in both languages, were also invited to review the survey questionnaires for both languages for clarity of instructions, content validity, and semantic consistencies. Based on the double translation and the expert advice, minor corrections were made to the Chinese version of the questionnaire to ensure the equivalence of meanings of all items across the two versions.

Data collection was carried out between January and February, 2010. We randomly selected non-IT organizations (e.g., banks, hospitals, government agencies, etc) in different provinces in China and sent out the survey request to the IT department leader of each organization through e-mail. After the leader returned with the agreement to take the survey, we further invited more IT professionals in each department to answer the questionnaire. In total, 250 questionnaires were distributed, in other words, 250 participants were invited.

Results

We collected 148 responses, yielding a response rate of 59.2%. Among them, 22 cases with obvious missing data were removed and 126 cases were kept for further analysis. The demographics information is shown in Table 3.

Table 3: Demographic Data of Respondents

Demographic variable	Categories	No of respondents	Percentage (%)
Gender	Male	99	79
	Female	27	21
Age	Below 23	29	23
	24-29	68	54
	30-35	12	10
	36-40	7	6
	Above 41	9	7
Education	College	22	17
	University	95	75
	Postgraduates	9	8
Firm tenure	Below 2 years	70	56
	2-3 years	13	10
	3-5 years	13	10
	Above 5 years	30	24
Work tenure	Below 2 years	60	48
	2-3 years	16	13
	3-5 years	13	10
	Above 5 years	36	29
Firm type	Foreign ventured	14	11
	Joint ventured	15	12
	State owned	45	36
	Private	43	34
	Others	8	6
No. of employees	Less than 50	23	18
	51-99	11	9
	100-299	26	21
	300-599	16	13
	600-1999	23	18
	Above 2000	26	21
No. of IT employees	Less than 5	27	21
	5-9	23	18
	10-29	32	25
	30-49	12	10
	Above 50	31	25

Measurement Instrument Assessment

We employed two criteria to assess measurement instruments: reliability and discriminant validity. We used Cronbach's alpha (Cronbach 1951) to examine reliability. As indicated in Table 4, all constructs had high reliability, exceeding the threshold of 0.707 (Nunnally 1978). We conducted factor analysis to assess discriminant validity. Principal components analysis and varimax rotation were used in factor analysis. Results in Table 4 show that, except for the third indicator of the scale of organizational identification (OGID3), all other indicators loaded more highly on their intended construct than on other constructs (Thompson et al. 1991). Thus, we removed OGID3 from further analysis. We then computed the average of all the indicators of each construct to derive construct score for hypothesis assessment.

To code relational closeness scores, we first classified the names generated by each respondent into either IT group or non-IT group. We then averaged the closeness scores in each group for every respondent. For instance, one

respondent generated four names and indicated three were from the IT department and one from a non-IT department. The closeness scores reported by the respondent were 1, 1, and 2 for the three IT employees and 1 for the non-IT employee. Based on our scheme, the closeness scores for this respondent were coded as 1.33 [(1+1+2)/3 = 1.33] for peer IT employees and 1 [1/1=1] for non-IT employee, respectively. If all of a respondent's generated names belonged to the same group, we averaged the closeness scores for all names as group closeness score and assigned 6 to the other group. For instance, a respondent generated three names with closeness scores as 1, 2, and 2. All names were from the IT department. According to our coding scheme, the closeness scores for this respondent were coded as 1.67 [(1+2+2)/3 = 1.67] for peer IT employees and 6 for non-IT employees.

Table 4: Assessments of Measurement Instruments

Construct	Indicator	Factor 1	Factor 2	Factor 3	Factor 4	Mean	S.D.	Reliability
Business-IT Alignment	ALGM1	.380	.243	**.674**	-.113	5.20	1.16	.86
	ALGM2	.244	.223	**.814**	-.067			
	ALGM3	.442	.017	**.717**	.192			
	ALGM4	.117	.008	**.684**	.207			
Boundary Spanning Activities	BSAC1	.165	**.735**	.098	-.045	5.34	1.43	.88
	BSAC2	-.008	**.775**	.437	.030			
	BSAC3	.112	**.756**	.410	-.035			
	BSAC4	.257	**.772**	.246	-.117			
	BSAC5	.266	**.817**	.035	.008			
	BSAC6	.218	**.676**	-.118	.069			
Organizational Identification	OGID1	**.789**	.157	.084	.013	5.22	1.08	.92
	OGID2	**.609**	.186	.175	.000			
	OGID3	*.279*	.283	.645	-.019			
	OGID4	**.791**	.169	.112	-.115			
	OGID5	**.783**	.170	.248	-.072			
	OGID6	**.791**	.084	.208	-.133			
	OGID7	**.652**	.257	.361	-.277			
	OGID8	**.748**	.255	.314	-.213			
	OGID9	**.753**	.181	.234	-.051			
Turnover Intention	TINT1	.081	.051	-.218	**.855**	3.63	1.51	.84
	TINT2	-.023	.044	-.071	**.873**			
	TINT3	-.167	-.051	.145	**.726**			
	TINT4	-.259	-.091	.170	**.757**			

Hypothesis Testing

We first run OLS regression to test the relationship between turnover intention and organizational identification. Controlling for demographic differences (gender, age, education, firm tenure, work tenure, salary, firm type and size, IT department size, and industry rank), we found a significant negative relationship between organizational identification and turnover intention (b= -.281, t= -3.135, p< .01, R^2= .189, adjusted R^2 = .111). Thus, H1 was supported.

We next used hierarchical OLS regression models to examine other hypothesized effects. Results are reported in Table 5. We constructed the base model (Model 1) by entering all control variables. The regression results show that none of the control variables had significant effect on the dependent variable – organizational identification. We then entered research constructs one by one to construct model 2 to model 5 and examine their effects on organizational identification.

As expected, there was a significant positive relationship between business-IT alignment and an IT employee's organizational identification, thus H2 was supported. Consistent with H3, boundary spanning activities were found to increase organizational identification. Thus H3 was supported. While the closeness of IT employees' relationships with their peers in the IT department was not found to influence their organizational identification, the closeness of their relationships with non-IT employees was found to positively and significantly increase their organizational identification. Hence, H5 was supported but H4 was not. Table 6 summarizes the results of hypothesis testing.

Table 5: Hypothesis Testing Statistics					
Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Gender	.079	.044	.060	.062	.070
Age	.028	.105	.057	.047	.015
Education	.117	.059	.054	.062	.078
Firm tenure	.288	.264	.346	.364	.356
Work tenure	-.133	-.137	-.242	-.246	-.205
Salary	.047	-.035	-.058	-.074	-.033
Firm type	.150	.052	.031	.036	.082
Firm size	.020	.020	.009	.029	.008
IT department size	.022	-.057	-.050	-.055	-.007
Firm rank in the industry	.077	-.025	-.068	-.071	-.073
Business-IT alignment		.661 (9.63) ***	.575 (8.05) ***	.568 (7.90) ***	.577 (8.14) ***
Boundary spanning activities			.250 (3.15) **	.243 (3.06) **	.210 (2.65) **
Closeness with peer IT employees				-.062 (-.92)	-.051 (-.76)
Closeness with non-IT employees					-.157 (-2.24) *
R^2 (adjusted R^2)	.117 (.041)	.513 (.467)	.553 (.505)	.575 (.522)	.593 (.533)
ΔR^2		.40***	.04**	.02**	.02**
F	1.530	10.939***	11.643***	10.797***	9.921***

Standardized regression coefficients are reported.
t-values for research variables are reported in brackets.
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 6: Summary of Hypothesis Testing Results		
Hypotheses		Results
H1	Organizational identification → turnover intention (-)	Supported
H2	Business-IT alignment → organizational identification (+)	Supported
H3	Boundary spanning activities → organizational identification (+)	Supported
H4	Closeness of relationship with peer IT employees → organizational identification (-)	Not Supported
H5	Closeness of relationship with non IT employees → organizational identification (+)	Supported

Additional Analysis

To better understand the contribution of organizational identification in explaining IT employees' turnover intention, we performed an additional analysis to examine the direct effects of business-IT alignment, boundary spanning activities, relational closeness with peer IT employees, and relational closeness with non-IT employees on turnover intention. An OLS regression model that regressed the above independent variables and control variables on turnover intention was constructed. Analysis results are reported in Table 7. We found that business-IT alignment, boundary spanning activities, and relational closeness with non-IT employees had no significant effect on turnover intention. Instead, relational closeness with peer IT employees had a significant negative effect on turnover intention.

Table 7: Results of Additional Analysis		
Variable	Model 1	Model 2
Gender	.052	.041
Age	-.186	-.126
Education	.254	.227
Firm tenure	.156	.052
Work tenure	-.023	.038
Salary	-.130	-.063
Firm type	.152	.145
Firm size	-.115	-.178

IT department size	-.002	.013
Firm rank in the industry	-.018	.024
Business-IT alignment		.009 (.091)
Boundary spanning activities		-.093 (-.844)
Closeness with peer IT employees		.223 (2.390)*
Closeness with non-IT employees		.024 (.248)
R^2 (adjusted R^2)	.119 (.043)	.176 (.072)
ΔR^2		0.06
F	1.56	1.69

Standardized regression coefficients are reported.
t-values for research variables are reported in brackets.
* $p < .05$

Discussions

Summary of Key Findings

This study had two major objectives. First, it attempted to account for turnover behavior of IT employees in non-IT organizations from an organizational identification perspective. Our survey on IT employees found empirical support for the hypothesis that IT employees' organizational identification could significantly reduce their turnover intention, an important antecedent to and predictor of actual turnover decision and behavior.

Second, and more importantly, our study aimed to identify the factors that influence an IT employee's organizational identification. Drawing on social identity theory and taking into account the unique characteristics of IT employees' working environments in non-IT organizations, we theorized that IT employees' organizational identification could be affected by organization-, job-, and personal relation-related factors. We found empirical support in all of the three aspects. Our survey data showed that at the organizational level, business-IT alignment, reflecting an organization's positioning of IT in its business strategies, could significantly improve its IT employees' organizational identification. Relating to IT employees' job characteristics, we found that when IT employees' work arrangements involved considerable cross-boundary activities, their identification with the organization also increased. At the individual level, we demonstrated that IT employees' close interpersonal relationships with non-IT employees working in other functional areas tended to blur their perceptions of inter-department boundaries and divide and increase their identification with the entire organization.

Interestingly, we found that all of the above factors had no direct effect on IT employees' turnover intention. This indicates that organizational identification is a critical construct that mediates the effects of business-IT alignment, boundary spanning activities, and the closeness of an IT employee's relationships with non-IT employees on turnover intention.

Our hypothesis about the negative effect of close relationships with peer IT employees on organizational identification was not empirically supported by the data. One plausible explanation is that while intimate relations with other IT employees in the same IT department may enhance IT employees' group-level identification, they may not necessarily weaken their identification with the organization. This finding supports the idea that identification with different social entities is not zero-sum and higher identification with one may not imply lower identification with the other (Wallace 1995). Additionally, we found that IT employees' close relationships with their peers could negate their turnover intention directly. This finding suggests that intimate interpersonal relationships in the IT department would increase IT employees' social embeddedness in the department and the organization. The constructed within-department social network could lead IT employees to stay with their current organizations.

Theoretical Contributions

The current study has made several important theoretical contributions. First, it identifies organizational identification as an important factor influencing IT employees' turnover behavior. Although employees' organizational identification has been widely observed to lead to employee behaviors favorable to organizations, to the best of our knowledge, there has been no explicit empirical study confirming the effects of IT employees' organizational identification on their turnover decisions and behaviors. The concept closest to organizational identification that has been so far studied in IT employee turnover literature is organizational commitment (Joseph et al. 2007). For instance, Thatcher et al. (2003) have shown that organizational commitment negatively correlates with

voluntary turnover. However, though highly correlated, organizational identification and organizational commitment are conceptually distinct and the former has been suggested as a critical antecedent to the latter (Bergami and Bagozzi 2000; Foreman and Whetten 2002; Van Vugt and Hart 2004). Thus, demonstrating that organizational identification could alleviate turnover behavior is one of the theoretical contributions of the study.

Second, this study reveals the antecedents of IT employees' organizational identification in organization-, job-, and relation-related aspects. We theorize that IT employees' self-definition in relation to their organizations could be shaped by their work contexts. The contexts are influenced by the organizations' strategic positioning of IT, IT employees' work assignments, and their relationships with non-IT employees in the organizations.

Third, the study extends the literature on business-IT alignment. Prior research of business-IT alignment has mainly focused on either the factors influencing the coupling between an organization' business strategies and IT/IS strategies or the organizational impacts of business-IT alignment (e.g., Chan et al. 2006, Preston and Karahanna 2009). This study enriches the literature by showing the impact of business-IT alignment, an organizational level phenomenon, on individual IT employees. Integrating the findings in this study that business-IT alignment can heighten IT employees' identification and the insights from prior literature that business-IT alignment will lead to higher contribution of IT toward organizational performance, we can plot two routes whereby business-IT alignment would influence the realization of IT value. One is the direct route, suggested by extant literature, that alignment increases IT value. The other is an indirect route where alignment increases IT employees' organizational identification, which in turn could improve their individual as well as collective performance and consequently the contribution of IT to business. It is an interesting research question to empirically test whether the two routes co-exist in an organization and their relative dominance.

Fourth, inconsistent with prior literature that suggests boundary spanning activities could affect IT employees' turnover behavior, our study has not found such a direct effect. Instead, we have found that IT employees' organizational identification played a significant mediating role. Our finding calls for further research to reconcile the inconsistency. Diverse organizational and even cultural factors could be incorporated in future studies to explore whether they moderate the effects of boundary spanning activities on turnover behavior.

Fifth, our study explicates the effects IT employees' personal relationships at work on their organizational identification. It distinguishes IT employees' personal relationships between peer IT employees and non-IT employees and shows their differential effects on IT employees' behaviors. To the best of our knowledge, this is among the first to examine IT employees' turnover behavior at interpersonal level. Based on our findings, new insights on how to reduce IT employees' turnover could be developed. Additionally, we introduce a new method, name generator method, to capture the characteristics of an individual's personal relationship and social network. We expect this new method could enhance and complement the social network assessment method used in social network research (e.g., Rogers 1995).

Practical Implications

Our study sheds significant light on the management of IT human capital.

To fully realize the business impacts and utilities of the existing IT investment, organizations should value the roles and contributions of their IT employees, although they are not working in the key functional areas. High retention rate among IT professionals is a necessity for organizations to derive the value of IT applications and in turn to better support their overall business objectives and strategic planning. Our study shows that, to improve retention, organizations must recognize the role of IT employees and help them develop a sense of organizational identification with the organization. Unless IT employees treat themselves as critical resources in non-IT organizations, they will less likely work the full potential to support other non-IT departments.

While organizations increasingly recognize the strategic value of IT on organizational performance, our study suggests that they need to formally and explicitly highlight the strategic contribution of IT when formulating their business strategies and communicate the strategies throughout the organization. Explicit expression of the value of IT from top management will not only boost IT employees' work performance, but also can directly enhance their organizational identification.

Organizations also need to pay attention to their IT employees' work assignments. Increasing IT employees' exposure to non-IT functions and work processes could effectively enhance their identification with the organization. Job rotations could be scheduled to maximize IT employees' interaction with non-IT work processes and personnel. Through cross-boundary exposure and interactions, not only IT employees' organizational

identification could improve directly, they may also develop close interpersonal relationships with non-IT employees, which in turn can further enhance their organizational identification.

Our finding of the effect of close personal relationships between IT and non-IT employees on organizational identification suggests an alternative way to retain IT employees in organizations that have limited cross-boundary assignments for IT employees. These organizations can create opportunities such as social events to allow IT and non-IT employees to interact and develop personal relationships. Fostering good social relationships among IT employees is another approach to retaining valuable IT talents. Although such an approach may not improve IT talents' identification with the organization, it is still effective to reduce their turnover behaviors.

Limitations and Future Research Directions

Our study comes with some caveats.

This study was conducted with IT employees' in China. Caution should be exercised when interpreting and generalizing our findings. As culture plays a critical role in shaping individuals' cognition and behavior in an organizational context (Abrahams et al. 1998, Hofstede 1991), we suggest that researchers should pay attention to cultural effects that could possibly limit the generalizability of our study. We encourage researchers to extend the model to IT employees in other countries to establish the robustness, reliability, and generalizability of our findings. Specifically, we envision two possible avenues to extend our research to other cultures. First, studies can explore and compare that, given the same levels of antecedents, whether the levels of organizational identification between IT employees in China and other Asian countries and IT employees in Western countries exhibit a systematic difference. The rationale of proposing this research question arises from the notion that Asian culture tends to focus on the collectives than Western culture (Moorman and Blakely 1995). Shaped by their distinct culture, employees in Asian organizations could be more inclined to attach to their organizations emotionally and psychologically and consequently develop higher organizational identification than those in Western organizations. This proposition indicates that Asian culture could play a positive moderating role to strengthen the effects of the antecedents to organizational identification.

Second, future research could dwell on the effects of the closeness of personal relation when extending our study to other cultures. Specifically, researchers could examine and compare the effects of relational factors on IT employees' organizational identification between Westerners and East Asians. Cultures vary in relational norms, which are manifested in the workplace as employees' different habits and expectations about interpersonal relationships (Morris et al. 2008). Relational norms may lead interpersonal relationships to exert differential influences on an employee's identification with the organization in which the relationships are nested in different cultures. In our case, Chinese IT employees' close relationships with non-IT employees could heighten their organizational identification. Researchers should note that interpersonal relationships play a critical role in Chinese culture, as reflected by the well-known folk concept of *Guanxi* (Lin 2001). Chinese employees tend to extend familial relational norms to business settings and stress the importance of interpersonal relationships at workplace (Chua et al. 2009). Consequently, effects of interpersonal relationships on a Chinese employee's organizational behavior could be more pronounced. Thus, future studies could explore whether the effect of interpersonal relationships on IT employees' organizational identification would be more salient for IT employees in China than for those in the West.

Our study only examined IT employees' turnover intention. Although turnover intention is a reliable predictor of actual turnover behavior, we nevertheless encourage future studies to find evidence to support the impacts IT employees' organizational identification on their actual turnover decision and behavior.

We only studied IT employees' organizational identification. There are other social identification targets in an organization (Scott 2007) and IT employees could experience some other identification processes. For example, IT employees could identify with the IT profession and/or with their IT departments. Indeed, dual identification in IT employees with their employing companies and their profession has been observed in prior research (e.g., Bartol and Martin 1982). Future studies could examine whether identification with the IT profession or the IT department could affect IT employees' turnover behavior and compare their effects with the effect of organizational identification.

Conclusion

In this study, we introduce an organizational identification perspective to examine IT employees' turnover behavior in non-IT organizations. We demonstrate the validity of such a perspective through an empirical study. Additionally, we identify business-IT alignment, boundary crossing activities, and the closeness of IT employees' relationships with non-IT employees as three important antecedents to IT employees' organizational identification. Based on our findings, we propose several practices that could improve IT human capital management. The practices suggested are realistic to implement in the short term yet could possess strategic functions in the long run.

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